The Chomsky Hierarchy of Automata

FSM
Finite State Machine: Takes on a finite number of states. Transition from state to state is determined by current state and current input symbol.
Memory - finite, implicit

PDA
Push Down Automaton: Push down stack plus finite state machine. Transition from state to state is determined by current state + current input symbol + current top of stack character. In addition to state transition, can push and pop the stack.
Memory - infinite, explicit but limited access to memory

LBA
Linear Bounded Automaton: Finite tape (bounded by linear function of size of input, which resides on the tape), read/write head plus finite state machine. State transition is determined by current state + current tape symbol. In addition to state transition, can write to tape and move one tape square to the left or right.
Memory - finite, explicit with random access

TM
Turing Machine: Just like LBA except tape is infinite.
Memory - infinite, explicit with random access